June 6, 2006

Comments on the Notice of Intent to Prepare an EIS on the Cape Wind Project
Minerals Management Service
381 Elden Street
MS 4042
Herndon VA, 20164

cc: MEPA Office, Anne Canady, Executive Office of Environmental Affairs, No. 12643,
100 Cambridge St., Suite 900, Boston, MA 02114

cc: Cape Cod Commission, 3225 Main St., PO BOX 226, Barnstable, MA 02630-0226,
Attn: Cape Wind DRI Review

cc: Governor Romney, Massachusetts State House, Room 360 Boston, MA 02133
cc: Senator Ted Kennedy, 2400 JFK Building, Boston, MA 02203
cc: Senator John Kerry, 2400 JFK Building, Boston, MA 02203
cc: Attorney General Thomas Reilly, McCormack Building, One Ashburton Place, Boston, MA 02108

Project ID: PRG-HQ-0005
EOEA No. 12643
Cape Com. File No. JR#20084

Comments by Rebecca Harris, PhD, in response to the *Cape Wind Energy Project Draft Environmental Impact Statement*

I am an avian ecologist working at the Tufts University School of Veterinary Medicine Center for Conservation Medicine / Wildlife Clinic. I coordinate the Seabird Ecological Assessment Network (SEANET) which focuses on threats to marine and coastal birds, citizen scientist beach surveys for bird mortality, and compilation of seabird population and mortality information.

I appreciate this opportunity to address concerns raised by the *Draft Environmental Impact Statement* (DEIS) *for the Cape Wind Energy Project* ("Cape Wind"). My comments are focused on avian impacts, most relevant to my expertise, and are entirely my own. Below I offer concerns on specific points in the DEIS (reprinted in smaller gray font before my comments), and hope that MMS will consider these concerns when addressing Cape Wind's notice of intent to prepare a EIS.

I strongly support the development of renewable energy sources such as wind power. There is growing evidence from other sites that if siting and risk assessment are done thoroughly in advance of construction, impacts to birds (and other wildlife) can be minimized. However, I believe that the DEIS has some inaccuracies and data gaps that need to be addressed before the process can move forward. The US Fish & Wildlife Service (USFWS) has outlined their recommendations for pre-construction monitoring and post-construction monitoring of potential project impacts on wildlife. Not all of their recommendations have been followed by Cape Wind, and I urge the MMS to insist that Cape Wind address these gaps, before the project is allowed to proceed. The project is too large in scale to be undertaken as an expensive "experiment" that may have unintended environmental consequences.

BIRDS

***General Comments*: Migratory birds are treated as "protected species" under the Migratory Bird Treaty Act, although there is no mention of the act under the Regulations section and 5.6.1. The USFWS has the ability to prosecute developers for "incidental take" of migratory birds, should unintended mortalities occur upon construction. However, they would prefer to work with the developers at the outset to insure that impacts to birds and other wildlife are minimized.**

Cape Wind's DEIS acknowledges that the avian studies done thus far are inadequate for this project, and "further study" is recommended repeatedly in the Preliminary Avian Risk Assessment section 5.7-A. Therefore, the project proponents (and their environmental consultants) conclude that the risks to birds from this project are not well enough understood to proceed. It follows that additional years of year-round aerial, boat and radar surveys are vital (as recommended by Mass Audubon Society and the USFWS).

The estimate presented in the DEIS of 364 birds/yr killed by the project is not supported by the evidence available. The estimate of birds killed per year should be a range of values; it is impossible to predict the level of mortality so precisely when there are so many unknowns, and the data used to generate the figure are from land-based wind farms. Each species group (migrating landbirds, terns, and wintering waterfowl) should be assessed separately, and according to seasonal patterns. Risks to these species groups can be characterized as follows: 1) migrating landbirds (songbirds) are at risk during fall and spring migration periods, particularly in foggy, inclement weather, when they are known to become disoriented and will fly towards and into lighted structures (such as lighted wind turbines); 2) terns use the Sound for transit and foraging and Mass Audubon's call for additional years of boat and aerial surveys to complete the picture of habitat use, flight heights, and risk to endangered roseate terns must be considered in the EIS; and 3) waterfowl (including sea ducks such as eiders and long-tailed ducks) are known to use the Sound in enormous numbers (hundreds of thousands) during the winter. Regional assessments of habitat use should be performed in conjunction with the EIS, because although ducks have been shown to avoid offshore turbines in Europe, the turbines and their footprint are much smaller there, and there is more available habitat in the surrounding areas. Displacement of sea ducks from this prime feeding and wintering habitat must be considered, along with availability of suitable habitat in alternate sites.

Specific Comments in Response to the Draft Environmental Impact Statement (DEIS):

WTG STRUCTURES and BIRDS

5.7 Avian Resources

During aerial and boat surveys (and presumably during the radar observations as well), the majority (>90%) of birds (mostly seabirds and other waterbirds – loons, terns, etc.) were observed on the water or flying at altitudes below the lowest range of the radar. Therefore, a large percentage of birds flying below the rotor swept zone were probably not tracked by the radar.

Comment: The statement that the majority of birds observed during radar observations were presumed to be below the range of the radar (and below the rotor swept zone) cannot be made with certainty. Aerial and boat surveys found most birds at this low altitude, but these surveys were done during the day in good weather; radar was used at night during all types of weather. Thus, **to say that boat and aerial surveys were methods of "ground-truthing" radar studies is not accurate. Radar captures a different set of species flying at different altitudes, during different times of day and different seasons than the species observed by other surveys.** The altitude at which migrating songbirds fly ranges from 92-615+ m (300-2000 ft) (Kerlinger 1995; Lincoln et al. 1998), and radar should pick up most birds flying at this range. Because songbirds migrate at relatively high altitudes at night, you would not expect to observe very many during the daytime aerial and boat surveys, so it is inaccurate to infer that overall the majority of birds are flying near the water, on the basis of these surveys. This assumption ignores the millions of songbirds that migrate at night, many of which were presumably picked up by the radar survey.

Section 5.7.3.2.1 Collision Risk Evaluation **Night migrating songbirds do not tend to collide in large numbers with even brightly lit structures such as lighthouses, spotlighted buildings, and heavily lighted communication towers with guy wires** (see lists in Shire et al., 2000). The L-864 red flashing lights proposed for night-lighting of the WTGs have not been demonstrated to attract birds.

Comment: The above statement conflicts with other statements made in the DEIS, and is inaccurate. **There have been many incidents reported (and probably many more unnoticed or unreported) of songbirds colliding in very large numbers with lighthouses, buildings and communication towers** (e.g., USFWS 2000, R. Podolsky, personal communication, Kingsley and Whittam 2001). **Red pulsing lights have been demonstrated to attract and disorient birds** (Gauthereaux and Belser 1999), and red strobes have not been studied to my knowledge (USFWS 2000), so definitive statements about red flashing lights should be made with caution.

An issue of great concern that is not given enough attention in this DEIS is that of WTG impact on night migrating songbirds. The lower bounds of typical flying altitude of migrating songbirds (92-615+ m (300-2000 ft), Kerlinger 1995; Lincoln et al. 1998) would be within the rotor sweep height of 127 m (417 ft), and songbirds' attraction to lights would possibly bring them several meters lower and in contact with the structures (USFWS 2000, Kingsley and Whittam 2001). Indeed the number of birds estimated by radar studies to be flying in the rotor height zone each year was 608,942 birds (possibly including some flocks, which would increase the actual number of individuals). The decisions that are reached on FAA-required lighting for the towers will be very important when considering the potential impact of the towers on night migratory birds.

Even though migrating landbirds are only using the flight path for 10-20 days per year (as stated in the DEIS), the impact will not necessarily be relegated to a few birds. The DEIS reports that 10% of migrating songbirds were estimated to be in the rotor strike zone at night (from radar surveys), and **an estimated 69.5 birds/hr were estimated to be at rotor height during migration. Even these numbers are quite significant, and given that millions of birds migrate at these times of year and are concentrated into small areas, a range of values should be given to express the variation that occurs from night to night and year to year**. **Also, the number of birds at rotor zone height in preliminary radar surveys does not take into account potential attraction to lights, which is well documented in songbirds** (USFWS 2000, Kingsley and Whittam 2001). **In addition, more strikes are likely to occur during inclement weather, as birds can more easily become disoriented and unable to see the structures** (Herbert 1970)**, as mentioned in the DEIS. One year of radar study is certainly not enough to produce a reliable estimate of bird strikes, given annual**

variability in storm frequency and foggy and cloudy conditions. Finally, most shorebirds and some landbirds have been observed migrating at lower altitudes over the ocean than over land (Lincoln et al. 1998)**, bringing even more birds into the zone of possible contact with rotors than expected due to land-based wind farm surveys.**

Section 5.7.3.2.1 Collision Risk Evaluation (p. 128)

Comment: Because 19% of the study area was sampled, this is the adjustment used to extrapolate one observation of a grebe (or other species) flying at rotor height across the entire area. However, at the moment that the bird was observed flying at rotor height, 19% of the area was not being sampled (a much smaller percentage was being observed because of the nature of boat or aerial surveys), so it is not accurate to extrapolate in this way. The method of boat survey was not estimating density, just abundance in the area surveyed at the time, so extrapolations are more difficult. Thus, per year estimates of numbers of birds flying at rotor height (164 grebes, 1,350 loons, 4,091 gannets, 8,767 cormorants, 658 scoters, 18,629 gulls, and 10,958 terns) are not necessarily correct, and should be used more cautiously.

General Comment: Garthe and Huppop (2004) recently evaluated avian species vulnerabilities to wind tower collisions for the North Sea, and emphasized the importance of considering the following factors in determining risk: flight maneuverability, flight altitude, percentage of time flying, nocturnal flight activity, sensitivity towards disturbance by ship and helicopter traffic, flexibility in habitat use, biogeographical population size, adult survival rate, and conservation status. Each factor was scored on a 5-point scale to assign a sensitivity index to each species, given available data and some additional survey data. A similar procedure would be valuable to assess risk in the northwest Atlantic. Although some species are not shared in common with those in this European study, their conclusions are applicable to our avian populations to some extent. They concluded that species differed greatly in their sensitivity index, and loons were among the most sensitive (including red-throated loons *Gavia stellata,* a species of both regions), followed by the velvet scoter *Melanitta fusca* (species regularly observed in the Sound), sandwich tern *Sterna sandvicensis* (possibly reflecting vulnerability of common and roseate terns in this area) and great cormorant *Phalacrocorax carbo* (also present on the northwestern Atlantic coast during winter).

The DEIS concluded that gannets, terns, loons, alcids, sea ducks and grebes may fly at rotor height, and thus, some fatalities may occur. These conclusions follow those of Garthe and Huppop (2004, above) in terms of at risk species groups, so it is possible that the risk posed by WTGs to birds is too great. Similarly, it was stated that some unknown amount of mortality is likely to occur in shorebirds.

Section 6.0 Comprehensive Environmental Monitoring (general)

Comment*:* **There are no details given on the nature of post-construction biological monitoring, although some sort of monitoring is recommended for birds in the DEIS. For birds, in addition to radar and other population monitoring methods, I recommend beached bird surveys for mortality monitoring. Some preliminary pre-construction control data are available. Post-construction monitoring of avian mortality at offshore wind developments is certainly challenging, but some attempts should be made to delineate how this monitoring could take place, whether by beach or boat surveys.**

OIL POLLUTION and BIRDS

5.5.6.1.2 Potential Indirect Impacts

Bioaccumulation From Consuming Contaminated Prey

…In order to minimize and mitigate any minor spill incidents, all service vessels will be equipped with oil spill handling equipment. In addition, waste collection systems will be installed on board each WTG. The waste collection system is based on a container system for easy and safe handling during transfer from/to turbine-service vessel-dock…

…In open water, marine organisms such as **fish and whales have the ability to swim away from a spill** by going deeper in the water or further out to sea, reducing the likelihood that they will be harmed by even a major spill. Marine animals that generally live closer to shore, such as turtles, seals, and dolphins, risk contamination by oil that washes onto beaches or by consuming oil-contaminated prey (USEPA, 2004).

Comment: In the above **section regarding possible oil contamination from WTG operations, there is no mention of seabirds. It is well established that marine and coastal birds are among the most vulnerable animals to oil pollution. Oil in the marine environment is a threat to seabirds because it forms a thin layer on the ocean surface where many birds spend their time. The hydrophobic nature of oil causes plumage to readily absorb it, decreasing the bird's insulation, waterproofing and buoyancy, leading to death due to hypothermia or starvation, and the toxic properties of oil can also lead to death if ingested or inhaled** (Weise and Ryan 2003). **The amount of oil that is lethal to birds is very small** (Leighton 1995). **The idea that animals "have the ability to swim away from a spill" is very unlikely when it comes to birds (and probably most other taxa as well). There is enormous evidence from small and large oil spills that birds can be heavily impacted, and they typically do not exhibit avoidance behavior. Even lubricants and other oils from basic WTG operations are of concern to birds, particularly sea ducks which are vulnerable to oil because they spend much of their time resting on the water's surface** (King and Sanger 1979; Williams et al. 1994). Sea ducks are known to congregate in the Sound in large numbers (Tables 5.7-3 through 5.7-7, and the risk to these birds of low-level chronic oiling should certainly be considered. A single drop of oil can disrupt a bird's waterproofing, leading to death particularly during cold weather (Weise and Ryan 2003).

BATS

5.6.4.2.3 Bats

…as well as their limited home ranges and echolocation sensory systems, suggest that the number of bats likely to be at risk of collision with wind turbines in the Nantucket Sound Project area is extremely low. …Given that bats can detect large landscape and background features using echolocation at distances up to 328 feet (100 meteres) (Griffin, 1970; Suthers, 1970), it seems unlikely that foraging bats would be unable to detect turbines… **bats crossing the Sound should be capable of using echolocation to avoid wind turbines**.

Comment: Recent evidence indicates that wind turbines may kill large numbers of bats (estimated for one West Virginia site at at least 70 bats per turbine per year, Kerns and Kerlinger 2004), and although the available data comes from land-based wind farms, lack of data on offshore wind farms does not mean there is no risk to bats in the near shore environment. **The DEIS states that bats can use echolocation to detect and avoid wind turbines, but this is unlikely based on numerous studies showing large levels of bat mortality at wind turbines** (e.g., Kerns and Kerlinger 2004, Williams 2004). **Although there is no law equivalent to the Migratory Bird Treaty Act to requite developers to evaluate**

impacts to bats, the US Fish and Wildlife Service (USFWS) asked Cape Wind in 2000 to assess the risk of the Nantucket Sound project to bats. This risk assessment was not performed and the statement of no risk in the DEIS is not accurate. In the case of the West Virginia wind towers, no pre-construction surveys were performed to evaluate the project's risk to nocturnal migrant birds or bats, and the impacts were realized only after construction was complete. It is often difficult to predict what impacts to wildlife will be, but some assessment of habitat use and potential risk is better than none at all.

SEA TURTLES

5.5.6.1.1. Potential Direct Impacts
Electromagntic/Thermal Emmissions from Submarine Cable and Inner-Array Cables
Since the electric field would be completely contained within those shields, impacts are limited to those related to the magnetic field emitted from the submarine cable and inner-array cables. As described in Section 5.13, the magnetic fields associated with the operation of the inner-array cables or the submarine cable system are not anticipated to result in an adverse impact to marine mammals or sea turtles (ICNIRP, 2000; Adair, 1994; Valberg et al., 1997).

Comment: Submarine magnetic field alterations have the potential to affect sea turtle orientation, because marine turtles use magnetic fields to migrate (Irwin et al. 2003). Even subtle alterations of the local magnetic field have the potential to disrupt sea turtle movement patterns, so this possibility should not be discounted.

5.5.6.1.1. Potential Direct Impacts – **Construction/Decommissioning: *Acoustic Harassment*** The rarity with which the protected whale species and sea turtles occur within Nantucket Sound...

Comment: Sea turtles are not necessarily rare visitors to the Sound, and Mass Audubon surveys recorded regular sightings of several species of this protected species while completing aerial bird surveys during late summer/fall (Perkins et al. 2003). The basis for most sea turtle population distribution information offshore of MA is mainly strandings data, which does not accurately reflect their abundance in Nantucket Sound. The majority of cold-stunned sea turtle strandings occur in Cape Cod bay and north of Cape Cod, but this is due to water circulation patterns, and does not necessarily reflect offshore turtle population densities.

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